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E-access, e-maturity, e-safety: a learner survey

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Executive summary

In September 2008, Becta commissioned the National Foundation for Educational Research (NFER) to conduct a large-scale, independent survey of learners' uses of new technologies.

Becta was particularly interested in finding out if and how learners used new technologies for learning at school and at home, and if learners were using these technologies safely. Consequently, the survey focused on the following three key themes.

- E-access: do learners have access to new technologies at school and at home? How often are learners using new technologies, particularly for learning? What learning tasks are learners using new technologies for?
- E-maturity: what levels of skill, confidence, and knowledge do learners have when using new technologies for learning?
- E-safety: what are learners' attitudes towards and practices for using new technology safely?

In addition, the project has sought to identify any links between learner attitudes, school characteristics, and learners' technological skills, e-confidence and levels of e-maturity.

This report presents the latest experiences and perspectives reported by learners themselves.

Research methods

The NFER conducted a large-scale national survey with primary and secondary school learners in England. The survey was administered between November and December 2008, and was completed by over 4,000 learners: 1,990 learners in primary schools (in Year 6) and 2,061 learners in secondary schools (in Year 10). The resultant data was analysed using a range of statistical tests, including basic frequencies, cross tabulations, factor analyses, and multi-level modelling.

Key findings

The key findings are set out in brief here, and in detail in the main report. These findings are organised by theme, and reflect the three key themes of this report, namely: the e-access, e-maturity and e-safety of learners.

E-access

The survey indicates that high numbers of learners have access to technology, at school and at home.

- In schools, display technologies and computers appear to be widely used, and learning platforms are becoming more established. However, there is further scope to encourage and promote the use of learning platforms and other technologies. In both primary and secondary schools, the use of some of the newer technologies is only emerging, and use of the

more 'advanced' technologies (such as the newer Web 2.0 tools) appears limited.

- In homes, access to technologies and the internet appears to be high, but is still not universal; and there may be some groups of learners for whom securing home access may be difficult to achieve.
- For those who do have access to technologies at home, the home appears to be a key site of learning, and schools could capitalise more on this in the future.
- Further analysis suggested that e-access is shaped by individual characteristics (such as gender and socio-economic status) and school-level characteristics (such as achievement scores, and the proportion of learners in receipt of free school meals and with English as an additional language). For example, in primary schools with either notably high or low levels of any of these features, learners report less frequent use of technologies for learning.
- There were some notable differences in the ways in which new technologies were used by boys and girls. For example, at primary level, fewer girls than boys are aware of some technologies; while girls at both primary and secondary levels are more likely to use technology at home to complete homework-related tasks than boys.

E-maturity

Learners, in both primary and secondary schools, expressed very positive e-attitudes towards using technology for learning.

- Most learners are very confident about using technologies, and appear to be relatively e-skilled at using technologies, at least on routine tasks such as saving a file, finding information online and opening a new document in a word processing programme.
- Both at home and at school, learners tend to use computers most frequently to conduct internet research and to present their work.
- Relatively low proportions of learners reported using what might be considered advanced skills such as using technology to create web pages, blogs or podcasts.
- Overall, e-maturity appears to be shaped more by individual characteristics than by school-level characteristics; the latter appear to have little or no impact. Some of the key individual characteristics are: attitudes towards school and using technologies for learning, and access to and use of technologies for learning at home.
- Interestingly, multi-level modelling indicated that gender does not play a key role in shaping e-maturity. This contrasts with this survey's findings from e-access analysis. The modelling suggests the gender differences that were identified may be limited to how boys and girls are using technology, and not necessarily their attitudes and skill levels.

E-safety

Learners indicated that teachers and parents are the main sources of e-safety advice and, elsewhere, schools have reported they are providing e-safety advice and guidance.

- However, learners' responses to questions on a number of ethical and safety issues suggest that there is scope for such provision to be improved by schools, especially in the primary sector. In particular, a considerable number of primary learners indicated they were 'not sure' about key e-safety issues.
- Further analysis indicated that e-safety is not shaped by school-level characteristics, but individual characteristics can play a key role. These characteristics include gender, e-access at home, e-skills, and attitudes towards school, learning and using technologies for learning. Among primary level learners, socio-economic status and exposure to using technologies for learning may also play an important role.

Recommendations emerging from these findings

Based on these findings, the NFER offers the following recommendations.

- The vast majority of learners have good access to technologies at home, and it would be beneficial for schools to build upon and make greater use of the ICT skills and experience that learners have acquired at home and outside of school. Examples might include greater use of mobile phones and gaming skills.
- At the same time, there also seems to be a need to ensure that home access is genuinely universal, and that the small numbers without home access do not get left behind. Particular attention may need to be given to 'hard to reach' groups or learners and families for whom there are serious barriers to home access/home use of computers.
- There is a continuing need for further encouragement of the use of particular (and new) technology skills and tasks in lessons, homework and coursework. While there are some signs that new technologies are becoming increasingly embedded across the curriculum there are still too many variations in the use of ICT across different school subjects.
- Awareness and use of learning platforms are both lower than they should be. We would recommend taking steps to further develop awareness among staff, learners and parents of what learning platforms are and what they can be used for. Relevant professional development activities for staff might be useful in this context.
- Many schools now have appropriate e-safety/acceptable use policies, but the challenge now may be to ensure that these are actually implemented, consistently and comprehensively throughout the school.

All of these recommendations are offered in an overall context of learners having very positive attitudes about using new technologies and about their impact on their

learning. Evidence from other surveys suggests that teachers and parents are also positive, and all of this bodes well for the further development and use of new technologies for learning in the future.

1 Introduction

In recent years there has been a drive to support, enhance and develop learners' use of new technologies. These initiatives have been prompted and led by various sources, but especially by Becta and its partners. In order to assess the impact of this drive and to plan the next steps, there is a need for a good evidence base and in September 2008, Becta commissioned the NFER to conduct a large-scale, independent survey of learners' uses of new technologies.

Becta was particularly interested in finding out if and how learners used new technologies for learning at school and at home, and if they were using these technologies safely. Consequently, the survey focused on the following three key themes.

- E-access: do learners have access to new technologies at school and at home? How often are learners using new technologies, particularly for learning? What learning tasks are learners using new technologies for?
- E-maturity: what levels of skill, confidence and knowledge do learners have when using new technologies for learning?
- E-safety: what are learners' attitudes towards, and practices of, using new technologies safely?

In addition, the project has sought to identify if there is any relationship between learners' attitudes, school characteristics, and learners' technological skills, e-confidence and levels of e-maturity.

To address these questions, NFER conducted a large-scale survey with primary and secondary school learners in England. The survey was administered between November and December 2008, and was completed by 1,990 primary learners (in Year 6) and 2,061 secondary learners (in Year 10). Sections 1.1 and 1.2 set out details of the policy context in which the research was undertaken and the research methods. Further details of the learner sample are in section 1.2.

1.1 Policy context

The new emphasis on using new technologies for the maximum benefit of learners has been influenced by a number of policies, predominantly under the contexts of the national *Harnessing Technology Strategy* (Becta 2008) and the *Children's Plan* (DCSF 2007). Examples of important, recent and ongoing developments in this policy context include:

- increases in the numbers of schools equipping themselves with learning platforms, which provide opportunities for integrating the use of technology across the school and providing dedicated online 'learning spaces'

- attempts to promote digital inclusion by providing greater home access to computers for learners and their families through, for example, the Computers for Pupils scheme and the Home Access programme¹
- taking steps to engage parents in their children's e-learning experiences and processes by, for example, encouraging schools to move towards more interactive forms of online reporting
- debates and recommendations relating to topics such as the educational uses of games; using technology for leisure versus technology for learning; and child protection and e-safety issues.

The original *Harnessing Technology Strategy* (Becta, 2005) set out a five-year plan for a system-wide approach to the application of information and communications technology (ICT) in education, skills and children's services. In order to update these plans, the strategy was revised and published as: *Harnessing Technology: Next Generation Learning 2008-14* (Becta 2008). This revised strategy has a central focus on achieving greater value for learners from technology, and sets out a commitment to ensuring every school, college, university and training provider is 'technology confident'. The aim is to achieve this through engagement with learners and parents, along with the professional development of teachers and trainers. Two of the system outcomes, against which the impact of the strategy will be measured, relate directly to learners (Becta 2008, p47). These are:

- improved personalised learning experiences
- engaged and empowered learners.

Harnessing Technology for Next Generation Learning: Children, Schools and Families Implementation Plan 2009-2012, was published by Becta in March 2009. This sets out the core goals of the strategy, the objectives supporting these goals, and key priorities and action points. Of the five key priorities identified, two relate directly to learners (Becta 2009, p6):

- promoting a technology-related learner entitlement and working to close the gap for disadvantaged learners, to enable all learners to access and use technology effectively, safely and purposefully in support of their learning.
- putting in place universal access to powerful learning tools, content and support for family and informal learning.

The plan is supported with guidance for schools and leaders in further education and skills, and also outlines how £600M of funding will be distributed for technology-related capital expenditure. This funding is distributed via the Harnessing Technology Grant, and the scheme runs until 2011.

The Children's Plan (DCSF 2007) has also been an important driver for promoting learners' (and parents') use of new technologies. The unifying theme of the plan is a partnership between schools and parents, and in this respect, certain elements of the *Harnessing Technology Strategy* (Becta 2005), such as school-learner-parent

¹ See www.becta.org.uk/homeaccess

communications and access to technologies at home, have become particularly important.

In the light of these policy goals, one of the key objectives of this learner survey has been to collect information that will assist Becta with assessing progress towards the aims and outcomes of the revised *Harnessing Technology strategy* (Becta 2008) and the *Children's Plan* (DCSF 2007); and making future strategic decisions about supporting learners' uses of new technologies. The survey questionnaire was informed by the new *Harnessing Technology Strategy* (and by key Becta personnel) and included questions on specific elements of the strategy such as home access, uses of school websites (learning platforms), e-safety and the uses of technologies for learning in a variety of different formats.

This survey was carried out by the NFER alongside the *2009 Harnessing Technology for Schools Survey (HTSS)* (Rudd et al, forthcoming), which elicited teachers' views about the use of new technologies. Consequently, in compiling this report, the research team have been able to cross-reference learner and teacher views at points where such comparisons are useful and appropriate.

1.2 Research methods

The survey was carried out with nationally representative samples of primary and secondary schools, selected from the NFER's Register of Schools (ROS).

To ensure that the questions were appropriate for the age, cognitive development and educational experience of the learners in each sector, NFER prepared two questionnaires: one for primary learners and one for secondary learners. However, in order to aid comparisons between the two sectors, the questions and scales were kept as similar and comparable as possible, and there is a significant degree of overlap between the two questionnaires.

In each sector, the sample was drawn from one year group: Year 6 learners in primary schools and Year 10 learners in secondary schools. These two year groups are often selected for surveys of school-aged learners, and focusing on one year group in each school limits the burden of administration on school staff. Early Years' settings, special schools, and adult learners were not included because these present a number of additional complexities that would require a longer project timescale than was available.

The response numbers in Table 1.1, approximately twice the original target sample sizes, were very positive and suggest that there is much interest in research into new technologies among learners, teachers and schools.

Table 1.1 Sample sizes

	Primary	Secondary
Number of schools that returned questionnaires	62	39
Original target sample (numbers of learners)	1,000	1,000
Numbers of learners who returned completed questionnaires	1,990	2,061

Tests were carried out to compare the achieved sample of schools with the full population of schools from which the sample was drawn. The sample was found to be representative of schools nationally in terms of the percentage of pupils eligible for free school meals (FSM), school achievement band (based on Key Stage 2 or GCSE test results, as appropriate), school type and government office region.

An even split was obtained between boys and girls for the primary sample: 49 per cent of respondents were male and 50 per cent were female (one per cent did not state their gender). For the secondary survey, the proportions were 52 per cent male and 46 per cent female (two per cent did not state their gender).

A question on the number of books in the home was included in the questionnaire as a proxy for individual socio-economic status, and comparisons based on this measure are reported in subsequent sections of this report.

Statistical analysis

The survey responses were analysed using the following techniques:

- basic frequencies for each question from each of the two questionnaires
- (primary and secondary)
- cross tabulations of selected questions from both surveys to examine, for example, if responses by gender were significantly different. The findings are only reported in the main text where the results were found to be statistically significant at a one per cent or five per cent level
- factor analyses (combining a number of questionnaire items) to develop overall measures of learners' ICT skills and e-maturity, and measures of learners' attitudes (see Appendix 1) ²
- multi-level modelling of the questionnaire data to look at, for example, relationships between learner skills and e-maturity, and various learner and school characteristics (see Appendices 2 and 3).

1.3 The structure of this report

This chapter has set out details of the policy context for the learner surveys, along with information about the samples, methodology and forms of analyses used. The following three chapters set out the key findings from the learner survey, organised around three key themes.

- E-access: learner access to technology at school and at home, and the types of learning and technological activities that learners use technology for (Chapter 2).
- E-maturity: learner attitudes towards technology, as well as confidence, knowledge and skill (Chapter 3).
- E-safety: learner knowledge about, and practice of, e-safety when using technologies (Chapter 4).

² The appendices appear with this document on the Becta website www.becta.org.uk

The final chapter summarises the key findings from this study, and points to some of the areas where research, policy and practice could be further developed in the future.

2 E-access

Establishing the levels of access learners have to technologies is the first step in understanding how they use it. This chapter initially focuses on the e-access of learners at school, and considers:

- what types of technology are being used for learning
- what learning tasks technologies are being used for in schools
- how often technologies for learning are being used in lessons.

This chapter then shifts its focus to learner e-access at home and, in particular:

- the prevalence of technologies in learners' homes
- the type of technological activities that learners are undertaking at home
- some of the issues that affect home access, such as ownership and location of a computer.

The chapter concludes with a discussion of the factors and characteristics that affect learners' access and use of technologies.

2.1 Key findings

This chapter focuses on learners' e-access for learning at school and at home. Key findings are as follows.

- Computer use in primary and secondary schools is widespread, as is the use of interactive whiteboards (IWBs), although frequent use of other technologies is not yet evident in the majority of schools.
- Learning platforms are fairly well established in schools and a high percentage of teachers are recommending their use. However, there is also some evidence to suggest that schools are not yet using the full potential of this technology, and that there is a need for better and stronger communication about the advantages and uses of learning platforms.
- The frequency of technology use in the core subjects of English, mathematics and science reduces between primary and secondary school.
- In secondary school, technologies are most frequently used for learning in ICT and business studies lessons. For the majority of other subjects, many learners felt there is scope for more technology to be used in lessons to support learning.
- Use of computers in school, outside of class time, is rare perhaps due to the high levels of e-access most learners have at home.
- Internet research is the task learners most frequently use computers for, both at school and at home.
- Homes of many learners are 'technologically rich' in that they contain, on average, six (primary) or seven (secondary) technologies.

- For learners, use and personal ownership of computers increase with age, and a computer located in the learners' bedroom results in the most frequent use.

Further analysis also indicated that e-access is shaped by individual and school-level characteristics.

- The prevalence and range of technologies in learners' homes tends to increase as socio-economic status increases.
- Gender differences are apparent in a number of ways. For example, at primary level, fewer girls than boys are aware of some technologies and girls (at primary and secondary level) are more likely to use technology at home to complete homework-related tasks.
- School level characteristics appear to shape how frequently learners use technology, especially at primary level. The data suggests that schools tend to make less frequent use of technology if they have notably high or low achievement scores, or notably high or low proportions of learners in receipt of free school meals or with English as an additional language.

2.2 E-access at school

By way of background, it may be useful to be aware of the HTSS findings (Rudd et al, forthcoming) about computer availability in schools. These showed that, for all schools, there was an average of 4.5 learners to each computer. Further, there was an average for:

- primary schools, of 6.6 learners to each computer
- secondary schools, of 4.2 learners to each computer
- special schools, of 2.6 learners to each computer.³

Broadly, these findings suggest, when compared to those of previous surveys, that the average number of learners per computer is falling, for example, from 6.2 for all schools in 2008 to 4.5 in 2009.

In primary classrooms the interactive whiteboard (IWB), not the computer, is the most frequently used technology device: 79 per cent of primary learners reported using IWBs 'more than once a week': more than double the amount who used computers with the same frequency (38 per cent). It should be noted, however, that 'use' was open to interpretation by respondents. For example, learners might regard looking at a whiteboard display, controlled by the teacher, as 'use', as well as any more interactive learner involvement.

Although IWBs were the technology used most often in many primary classrooms, aggregate frequencies indicate that, overall, computer use was highest: 93 per cent

³ Computer-to-pupil ratios have been produced from the survey findings by calculating the computer-to-pupil ratio for each school and then calculating the (mean) average.

of primary learners reported using a computer at school 'about once a week or more'⁴ compared to 85 per cent using IWBs.

Similar results were reported by secondary learners: IWBs and computers were also the most frequently used technologies. However, there were considerable differences between the two sectors in terms of how frequently these technologies were used. While similarly high numbers of learners, across both sectors, reported using these technologies 'about once a week or more' (see Table 2.1), closer inspection revealed that learners in secondary schools are considerably more likely to use their computers 'more than once a week' (62 per cent, compared to 38 per cent of primary learners). These same figures also suggest that primary learners are more likely to use IWBs 'more than once a week'.

Table 2.1 Frequency of use of computers and IWBs by learners

More than once a week			About once a week or more (more than once a week and about once a week combined)	
	Primary (%)	Secondary(%)	Primary (%)	Secondary (%)
Computers	38	62	93	83
IWBs	79	63	85	76

Primary N = 1990 Secondary N = 2061

This finding is supported by 2009 HTSS, which found that 98 per cent of schools have IWBs. Sixty per cent of schools reported having more than ten IWBs, so these are by far the most dominant technology in schools (followed by digital projectors). In addition, 77 per cent of teachers stated that they used an IWB at least about once a day.

The use of learning platforms⁵ is also fairly well established in both sectors: 53 per cent of primary learners and 46 per cent of secondary learners reported using these areas 'about once a week or more'.⁶

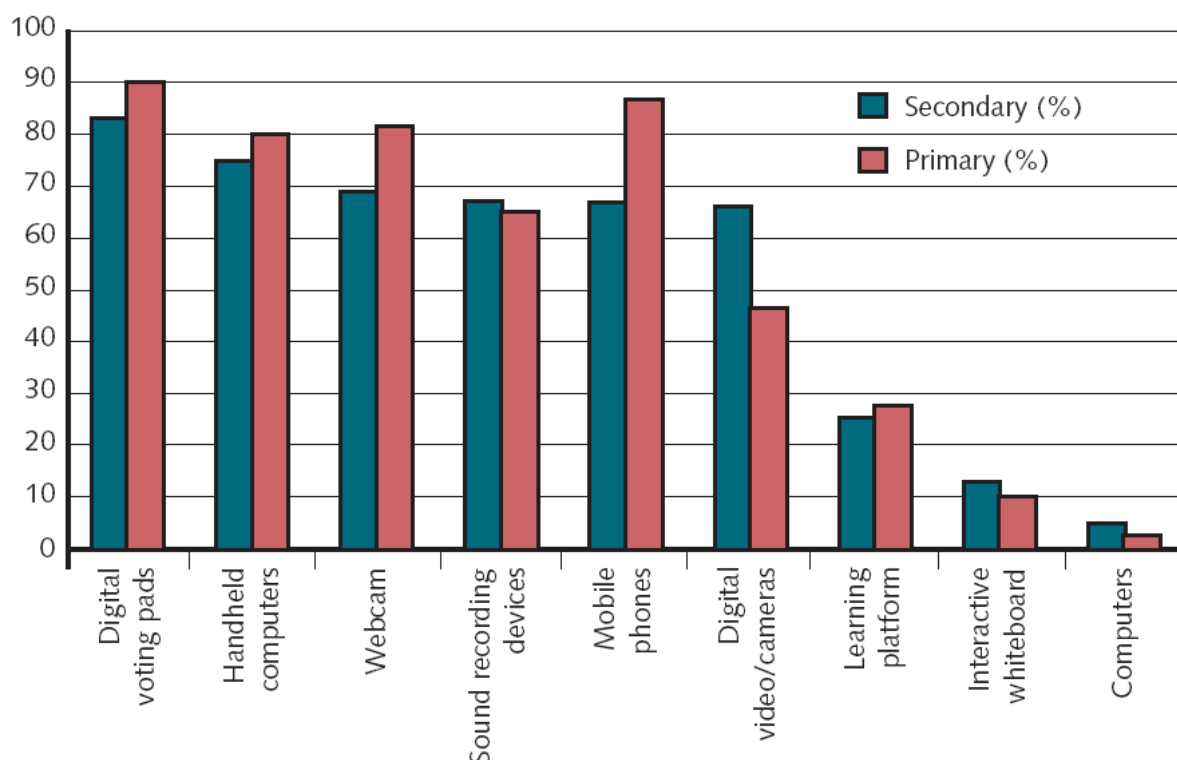
The use of other technologies appeared to be much less frequent, regardless of school phase. Figure 2.1 illustrates the relatively high proportions of learners who reported using, for example, voting pads and webcams in school, 'occasionally'⁷ or 'never'.

⁴ This phrase, 'about once a week or more' is used throughout the report where we have combined responses 'more than once a week and about once a week'.

⁵ As the phrase 'learning platform' was unlikely to be familiar to most learners, the participants in this survey were instead asked how often they used the 'school's website and online work areas'.

⁶ For teachers' views on the use of learning platforms, see NFER's forthcoming report on the *Harnessing Technology for Schools Survey*.

⁷ 'Less often' refers to less than 'about once a month'.

Figure 2.1 Technologies used by learners in school: occasionally or never

Primary N = 1990, Secondary N = 2061

Although computers were the most used technology at school, use of these outside specified class times was limited: over 61 per cent of secondary learners never, or only occasionally, used a computer at school outside of class time.⁸

The secondary survey sought to establish the reasons why learners used particular technologies by asking questions about the influence of (self-) learner motivation versus use encouraged by teacher recommendations. It appeared that learners' preference for accessing information online was largely self-directed: only 19 per cent reported using technology for this purpose because they were told to by a teacher; almost all others expressed reasons that indicated a personal interest, or a recognition that information accessed online was likely to be more up to date.

Learning platforms and online encyclopaedias were the only technologies that a large proportion of secondary teachers recommended to learners for use to support their learning (71 per cent and 63 per cent respectively). See Table 2.2.

The fact that schools have been working towards the 2010 requirement to have a learning platform in place may well be one of the reasons for the increasing popularity of these resources. And it is interesting to note that when teachers were asked in the HTSS how often they uploaded and stored digital learning resources on their school's network or learning platform, the majority of teachers reported doing so

⁸ This is 61 per cent of those secondary learners who responded to all three items in this question, that is, 745 out of 1,228 learners.

'often' or 'sometimes' (Rudd et al, forthcoming). Teachers were also asked whether they ever created digital learning resources (DLR) themselves. Nearly all (94 per cent) teachers reported creating their own DLRs at least 'sometimes', with around two-thirds (61 per cent) reporting that they did so 'often' (Rudd et al, forthcoming).

In other respects, however, there is a considerable way to go before the full potential of learning platforms for schools can be realised. In the 2009 HTSS (Rudd et al, forthcoming), ICT coordinators were asked how frequently the learning platform in their school was used for various activities. From their responses, overall, it was evident that learning platforms tended to be used for storing and accessing teaching and learning documents and information, rather than for engaging in interactive learning or communication. Clearly schools need time to embed new technologies, but the acquisition and use of learning platforms by schools does seem to have been slower than expected. Furthermore, even where learning platforms are in place, at least some teachers are not fully aware of their existence or what they can be used for. There seems to be a need for better and stronger communication about the advantages and uses of learning platforms.

Other than in relation to learning platforms and online encyclopaedias, there was little evidence to suggest any substantial recommendations by teachers for learners to use particular technologies to support their learning. According to learner reports, all other technologies are recommended by fewer than 40 per cent of teachers.

The extent of teacher recommendations to use technologies may reflect the degree of embeddedness of each technology in secondary schools, as shown in Table 2.2.

Table 2.2 Extent of teacher recommendations for technology use among secondary learners

Technology	% of teachers who recommend technology use	Extent of technology use in schools
School's learning platform	71	Embedded >60 per cent of learners reported teachers recommended technology use
Online encyclopaedias	63	
Email	39	Emerging 11-40 per cent of learners reported teachers recommended technology use
Online newspapers	22	
Video/picture sharing sites	21	
Wikis	15	
Instant messaging	13	
Social networking sites	10	Infrequent <11 per cent of learners reported teachers recommended technology use
Blogs	10	
Online discussion groups	8	
Podcasting	7	
Online virtual worlds	5	

Social bookmarking

4

N= 2061

What learning tasks are the technologies being used for?

The findings from the primary and secondary school sectors regarding the tasks that technologies were used for in school were very similar. In lessons, technology was most frequently used for sourcing information from the internet, with 76 per cent of primary and 68 per cent of secondary learners stating that they did this 'about once a week or more'.

Preparing written work or presentations were the other tasks which both primary and secondary learners regularly used technology for: 50 per cent of primary learners and 46 per cent of secondary learners prepared written work with technology 'about once a week or more'; while 45 per cent of primary learners and 30 per cent of secondary learners used technology for preparing presentations.

Having access to a computer at home, of course, will provide the learner with flexibility in relation to when and where he or she completes learning tasks, and this is one way in which new technologies can support personalising learning. In the HTSS, teachers were asked about the extent to which they agreed ICT helped them to personalise learning for each learner. Overall, about two-thirds either 'strongly agreed' (17 per cent) or 'agreed' (47 per cent) that ICT helped them to personalise learning. Additionally, when teachers were asked about how effective they felt they were in using ICT to personalise learning, the majority felt that they were either 'very effective' (12 per cent) or 'quite effective' (46 per cent) (Rudd et al, forthcoming). Likewise, almost three-quarters of the teachers involved in the Computers for Pupils scheme felt increased home access had helped them to meet the needs of learners with different learning styles (Lynch et al, forthcoming). Most parents (81 per cent) of learners involved in this scheme felt having a computer had helped their child to work at their own pace, and two-thirds of learners (67 per cent) reported having access to their own computer had enabled them to do their homework when they liked.

Around half (46 per cent) of all teachers responding to the HTSS reported 'often' or 'sometimes' setting homework that required the use of a computer or the internet (Rudd et al, forthcoming). In addition, in this year's survey, ICT coordinators were asked whether ('all', 'some' or 'none' of) the learners in their schools were encouraged to use e-portfolios. About three-quarters (74 per cent) of ICT coordinators in secondary schools stated that at least 'some' or 'all' of the learners in their school were encouraged to use e-portfolios, compared to two-fifths (40 per cent) of their counterparts in both the primary and special school sectors who reported the same thing. These results suggest that the setting of electronically sourced homework and coursework is increasing, though there will undoubtedly be variations by sector, across individual schools, and by teacher preferences.

While at school, learners did not regularly use new technologies for communicating with teachers or other learners (either in their own schools or other schools), as Table 2.3 highlights.

Table 2.3 Learners' use of technology at school for communication

% of learners who used technology to do this task only occasionally or never		
	Primary	Secondary
Communicate with other pupils in other schools	77	72
Communicate with teacher	65	68
Communicate with pupils in own school	60	51

Primary N = 1990, Secondary N = 2061

Use of technology in lessons

Unsurprisingly, ICT was the secondary subject area where technology was used most frequently: 98 per cent of secondary ICT learners used technology 'about once a week or more', 72 per cent of these learners 'more than once a week'. Technology use was also high among business studies learners, 46 per cent of whom reported using technology in their lessons 'more than once a week'.

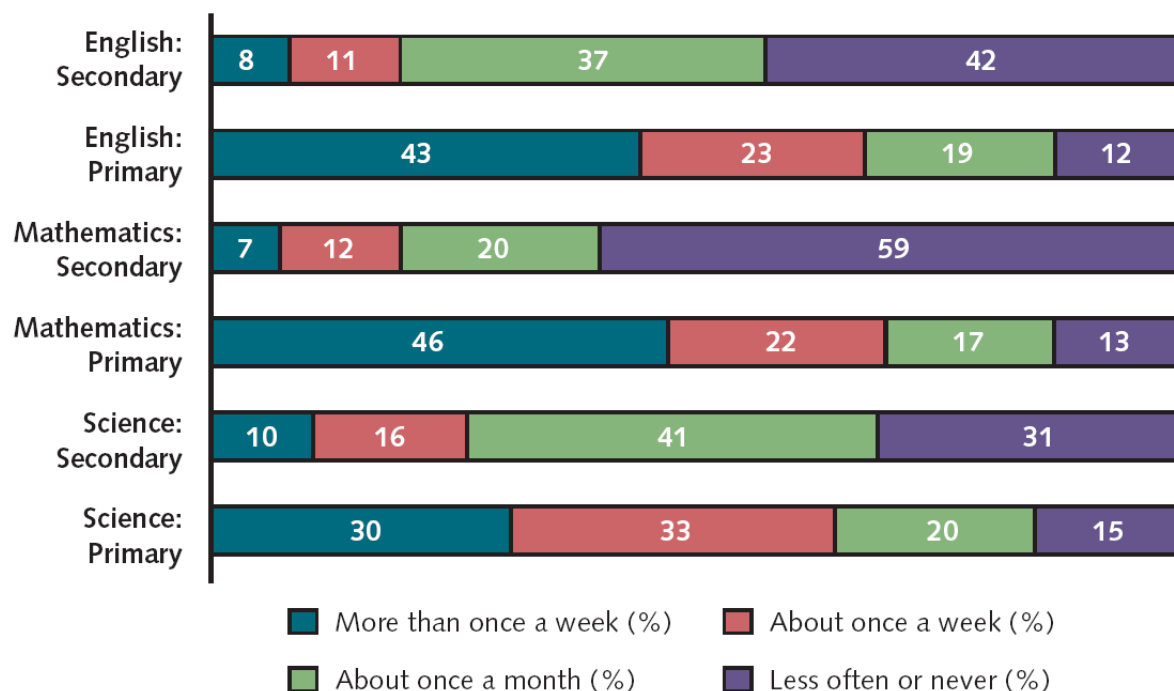
Technology use was especially low in secondary physical education (PE) and religious education (RE) lessons: 83 per cent and 70 per cent of learners, respectively, reported they used technology in these lessons 'less often or never'.

In primary schools, technology use in the three core subjects was high. Approximately two-thirds of learners reported using technology in each subject area (English, mathematics and science) 'about once a week or more'.

Frequency of use in science lagged behind English and mathematics, with only 30 per cent of primary learners using technology 'more than once a week' in science, compared with 43 per cent in English and 46 per cent in mathematics.

In secondary schools, the results indicated a different pattern of usage in the core subjects. Technology use in science was more frequent than in English and mathematics: ten per cent of secondary learners used technology 'more than once a week' in science, compared to eight per cent in English and seven per cent in mathematics.

A comparison of the data across the school sectors indicated that the use of technologies in English, mathematics and science declines considerably in the secondary sector, compared to the primary sector (see Figure 2.2).

Figure 2.2 Technology use in English, mathematics and science

Primary N = 1990, Secondary N = 2061

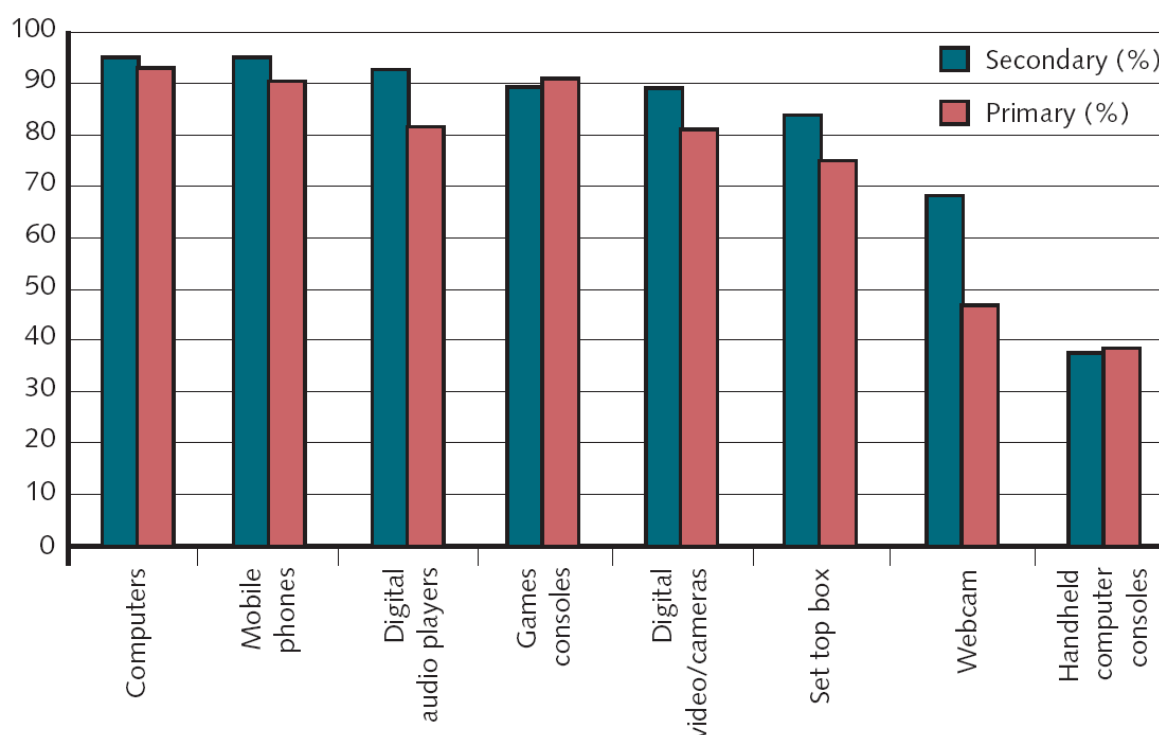
Due to missing responses and rounding, percentages may not sum to 100.

There are a number of likely explanations for these differences. Core subject lessons in primary schools are likely to be daily, whereas this will not be the case in secondary schools. The reduced number of lessons per subject in secondary schools may also partly explain some of the apparent decline in technology use. Also, it is likely that secondary learners will receive core subject lessons from discrete teachers (maybe even more than one per subject) whereas primary learners are likely to have one class teacher for all the core subjects. Therefore, in order for the high levels of technology use to be replicated at secondary level, it would be necessary for many more individual teachers to have personally embraced and encouraged the use of the technologies.

Secondary learners were also asked if they felt enough technology was used in the subjects they studied. For 10 of the 15 subjects listed, over 50 per cent of learners felt that technology could be used more. Those subjects where fewer than 50 per cent of students suggested technology use could increase were the two subjects which already had the most frequent use of technology: ICT and business studies, and the creative subjects of music, art, and design and design technology.

2.3 E-access at home

The survey suggested that the prevalence of technologies in learners' homes was high, as Figure 2.3 illustrates.

Figure 2.3 Equipment in learners' homes

Primary N = 1990, Secondary N = 2061

Desktop and/or laptop computers were particularly prevalent in learners' homes: 94 per cent of primary respondents and 96 per cent of secondary respondents indicated that they had a computer at home. Similar responses were provided about mobile phones (90 per cent of primary respondents and 95 per cent of secondary respondents).

In most cases, the prevalence of a particular technology in learners' homes was reported to be slightly higher among secondary learners than primary.

Not only was the prevalence of each individual technology in learners' homes high, but also the survey findings showed that, generally, learners' homes are very 'technologically rich'. Of the eight technologies included in the survey, homes of primary learners had, on average, six technologies; and the homes of secondary learners had, on average, seven technologies.⁹ This is an encouraging finding for those responsible for programmes that wish to promote home access for learners. It does need to be borne in mind, however, firstly, that the existence of a technology does not ensure its use; and, secondly, some technologies, such as mobile phones and games consoles, are limited in their potential to support learning because they are not allowed into many schools. This may change, however, and a recent survey conducted by NFER for Futurelab found that as many as 35 per cent of a nationally representative sample of teachers had used computer games (designed primarily for

⁹ Mean and median average for primary learners = 6 (approximately) technologies in home, mode = 7. Mean, median and mode for secondary learners = 7 (approximately).

entertainment) in their classroom for educational purposes (NFER and Futurelab, 2009).

Levels of awareness of technologies in the home among primary learners can be extrapolated from the numbers who answered 'don't know' for each technology. This suggested that learner levels of awareness of technologies could be tentatively grouped into high, medium and low levels, as shown in Table 2.4.

By contrast, secondary learners had a high awareness of the existence (or not) of all technologies in the home; the one exception was handheld computers, for which six per cent did not know if their home had one.

Table 2.4 Awareness of technologies in the home among primary pupils

		Percentage %
Handheld computers	14	Low awareness > 10 per cent learners answered 'don't know'
Webcam	10	
Set top box	7	Medium awareness 4-8 per cent learners answered 'don't know'
Digital video and camera equipment	7	
Digital audio players	5	
Games consoles	2	High awareness <2 per cent learners answered 'don't know'
Mobile phones	1	
Computers (desktop or laptop)	1	

N = 1990

Ownership, location and use of computers in learners' homes

Of those learners (primary and secondary samples combined) who had access to a computer in their home, around 94 per cent reported using it 'about once a week or more' (that is, 92 per cent of primary learners and 96 per cent of secondary learners).

Frequency of computer use in the home was higher among secondary learners: 92 per cent of secondary learners reported using computers 'more than once a week' compared to 75 per cent of primary learners.

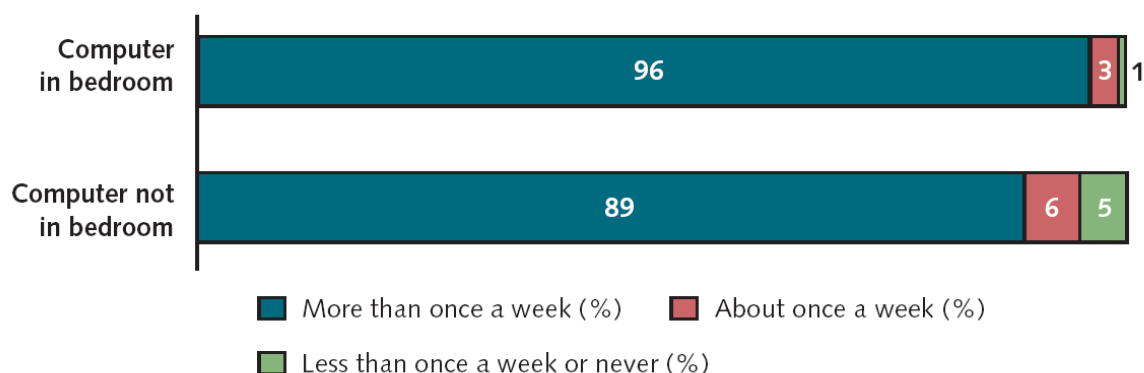
Personal ownership of computers also appears to increase as learners become older. Among secondary learners, ownership was almost double that of primary learners, while 49 per cent of secondary learners claimed to personally own a home computer, compared to 26 per cent of primary learners.

Almost half (48 per cent) of the secondary learners who had a computer in their home reported that the computer was in their bedroom. Further analysis suggested that there was a relationship between ownership of a home computer and where it was located. For example, 74 per cent of those secondary learners who owned a computer at home had it in their bedroom, and 45 per cent of those computers owned by parents or carers were located in the living room. However, it was also

interesting to find that for the 20 per cent of learners whose home computers were owned by the whole family and for the 15 per cent whose home computer was owned by parents/carers, the computer was still located in the learners' bedroom.

Although almost all learners with a computer in their home made 'very frequent' use of the computer, there was a significant difference in the frequency of use pattern of learners who did and did not have a computer in their bedroom. As may be expected, those with access in their own bedroom tended to use the computer more frequently as can be seen in Figure 2.4. It seems that a degree of privacy encourages computer use (although, of course, any perceived benefits of this have to be weighed against the need for parents/carers to be able to observe learners' computer use to ensure their safety and handling of internet content).

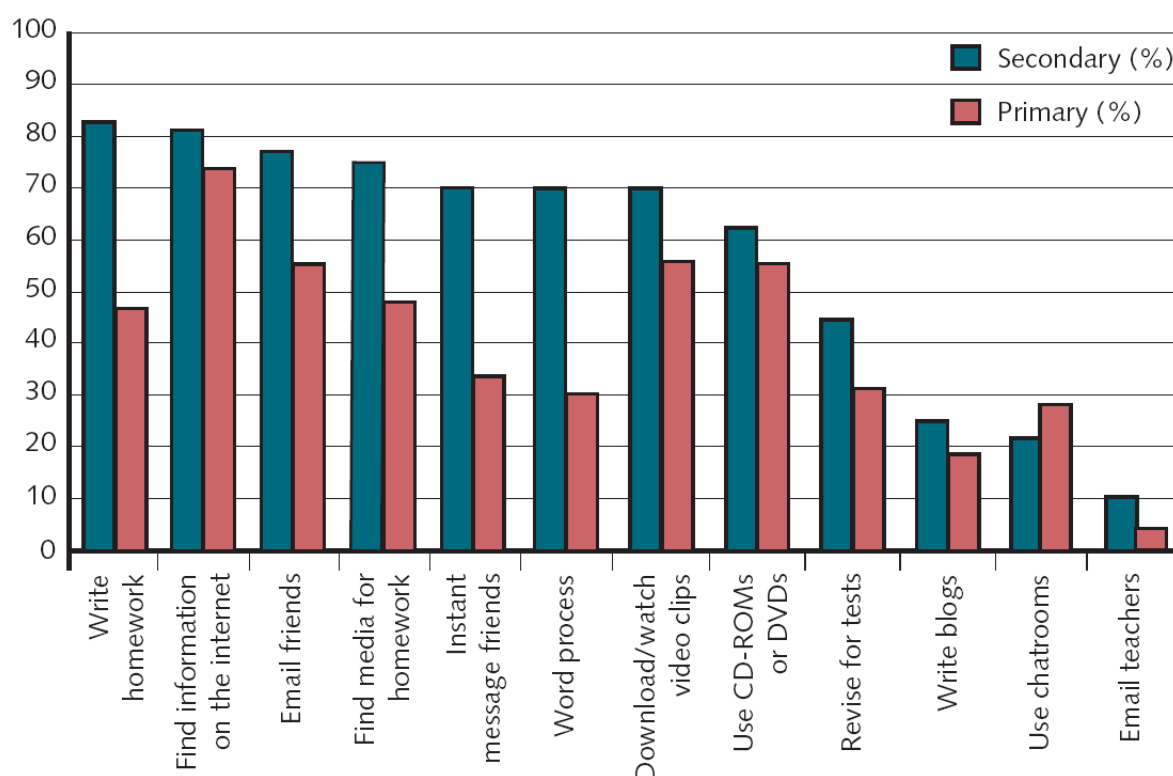
Figure 2.4 Frequency of home computer use versus location in bedroom (secondary learners)



N = 1392

What learning tasks are home computers used for?

Finding new information online was one of the most frequent tasks that both primary and secondary learners used a home computer for, suggesting that internet connectivity is important for home learning. This echoes the ways in which learners appeared to be using computers at school. The frequencies of other learning-related tasks are presented in Figure 2.5.

Figure 2.5 Learners' use of home computers: about once a week or more

Primary N = 1903, Secondary N = 2002

As noted, secondary learners who had a computer in their bedroom made more frequent use of it than those who had access elsewhere in the home. In addition to this, there was a significant difference in the pattern of how often learners with a computer in their bedroom completed certain tasks compared with those whose computer was elsewhere in the house. Learners were more likely, for example, to send emails to friends, download or watch video clips, and use CD-ROMs or DVDs more often if they had a computer in their bedroom.

2.4 Factors contributing towards access and use

Further analysis suggests that individual characteristics (such as gender and socio-economic status) and school level characteristics are key variables in the e-access of primary and secondary learners.

Individual characteristics

In terms of gender, there were significant differences in the patterns of how frequently boys and girls reported using technologies at school. The results of the cross-tabs are listed in Appendix 4 but, in brief, this analysis suggested the following.

Among primary learners:

- girls may use IWBs more often than boys
- among the minority of learners who use handheld computers, these may be more likely to be used by boys than girls

- use of mobile phones and sound recording devices, such as MP3 players, may be slightly favoured by boys (see Appendix 4, Table 2.1).

Among secondary learners:

- webcams (although generally used infrequently) appeared to be used more often by boys
- digital voting pads were used slightly more often by boys
- computers, although highly used by most learners, appeared to be used most frequently by boys (see Appendix 4, Table 2.2).

How learners report the extent of teacher recommendation they receive to use particular technologies also appears to vary by gender (see Appendix 4, Table 2.3). However, in a number of cases, these differences may simply be a result of the large degree of variation in male and female learners who had not heard of a technology. Such cases can be seen below in Table 2.5.

Table 2.5 Percentages of secondary learners who had not heard of specified technologies: gender variations.¹⁰

Technology	Boy (%)	Girl (%)
Social bookmarking	27	42
Wikis	23	42
Online virtual worlds	20	35
Podcasting	14	23
Online newspapers	8	10
Instant messaging	4	2

N = 1072

Secondary girls were also more likely than secondary boys to report that they used technology for learning 'because my teacher tells me to' (21 per cent and 16 per cent respectively. See Appendix 4, Table 2.4). In secondary schools, boys were more likely than girls to use computers at school outside of lessons, and this was more likely to be at the end of the school day (for both genders), as can be seen from the figures presented in Table 2.6.

Table 2.6 Gender variations: secondary learners' computer use at school (non-class time)

	Boy (%)	Girl (%)
Before class		
More than once a week	10	5
Less often or never	74	82
At break times or lunch times		
More than once a week	11	5
Less often or never	53	64
After school		
More than once a week	22	19
Less often or never	58	62

Boys N = 1072, Girls N = 954

There were few gender differences among either primary or secondary learners with regard to the tasks they used technology for (see Appendix 4, Tables 2.5 and 2.6). The most revealing, perhaps, was the difference between secondary learners who used technology to create films and animations; although not a task that many learners did often, this seemed to be more popular among boys.

¹⁰ Respondents were offered multiple responses, and some learners did not respond to some or all of these items. The above does not therefore imply that the inverse is automatically true; that is, although 27 per cent of boys indicated that they have not heard of social bookmarking, it should not be inferred that 73 per cent have heard of this.

There was little variation by gender in the prevalence of most technologies in homes, although, for both primary and secondary learners, boys were more likely than girls to report that there were games consoles in their homes (93 per cent of primary boys compared to 87 per cent of primary girls; and for secondary these figures were 93 per cent and 85 per cent respectively. See Appendix 4, Tables 2.7 and 2.8).

When it came to learners' use of technology at home, significant gender differences were evident, in contrast to technology use at school, where gender appears to have less of an effect. Girls in secondary schools reported they complete the following five tasks at home more often than boys: write homework, send emails to friends, find photographs, images or videos, send instant messages to friends and word process. Boys (at primary and secondary level) appear to download or watch video clips more often than girls.

Further analysis also revealed that socio-economic status can also shape e-access at home. This was measured by comparing (using cross-tabs) the number of books in the learners' home (a proxy measure of socio-economic status) with the technologies that the learner had in their home (see Appendix 4, Tables 2.11 and 2.12). This indicated that the prevalence and range of technologies in the home of both primary and secondary learners tended to increase as the number of books in the home increased, although the prevalence often dips slightly in the most affluent category.

School-level characteristics

Cross tabulations of school-level characteristics and tests of statistical significance were completed in order to establish whether or not there were any school-level factors that contributed to shape the opportunities that schools offer learners to use technologies for learning. The key variables examined were the level of:

- free school meal (FSM) eligibility (summarised on a five-band scale)
- English as an additional language (EAL) pupils (summarised on a four-band scale)
- achievement (overall Key Stage 2 performance for primary and overall GCSE performance for secondary).¹¹

These tests indicated that, for some technologies, the frequency of use was related to these variables. The effects that these characteristics have seem to suggest the following.

- Free school meals (FSM): The most frequent use of technology could generally be seen among learners whose schools fall into one of the three middle percentage bands of FSM. The difference in patterns of technology use according to percentage of FSM was significant (at the one per cent level) in 11 technologies and tasks (out of 17) at primary level and eight at secondary level. This suggests that schools that fall into the categories of

¹¹ Due to the excessive length of this data it has not been included in the appendices. It can be made available on request.

lowest, or highest, numbers of pupils eligible for FSM use technology less frequently than those who fall into the middle categories.

- English as an additional language (EAL): Learners from schools within either the lowest or the highest percentage bands of EAL (none and 50 per cent plus) tended to report 'less frequent' technology use than learners in schools within the two middle bands. The difference in patterns of technology use according to percentage of EAL was significant (at the one per cent level) in eight technologies and tasks (out of 17) at primary level and seven at secondary level. This suggests that schools with some EAL pupils use technology more often than those with either none, or over 50 per cent EAL pupils.
- Achievement: In primary schools, there was a significant difference in the patterns of technology use according to achievement in 11 (out of 17) technologies and tasks tested. For these technologies, there was a significant peak in frequent usage among learners from schools within the middle achievement band. This pattern was not evident, however, among learners from secondary schools (where there was a significant difference in six out of 17 technologies), although frequent use of technology does tend to be found in schools in the middle three achievement bands rather than either the lowest or highest bands.

Combined, these results provide a preliminary indication that the school-level characteristics of percentage of FSM, percentage of EAL and achievement do have a significant impact on the frequency of technology use in schools for some, but not all technologies. Generally, it appears that if a school falls into the extremities (high or low) of the scales of percentage of FSM, percentage of EAL and/or achievement then it is more likely to use technology 'less frequently' than schools who display more moderate figures with regard to these characteristics.

Results indicate that such effects are significant for more technologies at primary level than at secondary. As has been explained, these characteristics are not significant for all technologies, therefore indications must be treated cautiously. Further analysis, if required, could indicate which technologies are affected by more than one school characteristic and whether or not the affects of reducing the amount of technology use are compounded if a school is 'extreme' in more than one characteristic.

3 E-maturity among learners

The concept of 'e-maturity' is complex and has a number of dimensions. Its origins lie in attempts to assess the e-maturity of institutions, particularly further education colleges, so there are a number of challenges when applying the concept to individual learners. For simplicity, this survey focused on what could be described as three components of e-maturity, namely e-attitudes, e-confidence, and e-skills.

3.1 Key findings

This chapter focuses on the e-maturity of learners, and in particular on the e-attitudes, e-confidence and e-skills reported by primary and secondary learners. The key findings in this chapter are as follows.

- Learners expressed very positive e-attitudes towards using technology for learning.
- Learners exhibited high levels of e-confidence in their ability to use technology.
- The vast majority of learners reported that they were able to perform the more routine tasks that reflect learner e-skills, but were less proficient at tasks that might reflect more advanced e-skills. However, the level of e-skills seems to increase as learners progress; secondary learners were far more likely to report that they were able to complete the more 'advanced' tasks than primary learners.
- Learners in primary schools are more likely to be e-confident and e-skilled if they are from a home with high levels of technology which they can use for learning or leisure activities, and if they use these opportunities regularly.
- Learners in secondary schools are more likely to be e-confident and e-skilled if they have positive attitudes towards technology, and have access to technology for learning at home which they use frequently. The model also suggests that learners that are more e-confident and more e-skilled are likely to use more advanced strategies when searching for information on the internet.
- Gender may also play a role. Boys tended to express more confidence than girls about using technologies, and were more likely to report they could perform the advanced tasks that may reflect high e-skills. The latter result could, however, reflect the fact that boys typically tend to exhibit and express higher levels of confidence than girls.

3.2 E-attitudes towards using technology for learning

The survey findings revealed (and this is supported by other pieces of research in this area) that learners have very positive attitudes towards using technology for learning. For example, 90 per cent of primary learners reported they liked using computers at school, and only two per cent agreed with the statement that 'computers are boring'. The comparable figures for secondary learners were 85 per cent and five per cent. The findings from the HTSS (Rudd et al, forthcoming) suggest that teachers share these positive attitudes with their learners. For example, about

four-fifths (81 per cent) of teachers either 'agreed' or 'strongly agreed' that ICT makes learning more effective.

Learners also expressed strong views suggesting technologies helped them with their learning as follows.

- 74 per cent of primary learners and 67 per cent of secondary learners agreed' or 'strongly agreed' that 'technology helps them to learn at their own speed'.
- 79 per cent of primary learners and 85 per cent of secondary learners agreed' or 'strongly agreed' that 'computers make it easier to do their homework'.
- 85 per cent of primary learners and 77 per cent of secondary learners agreed' or 'strongly agreed' that 'technology makes learning more interesting'.

In contrast, only 11 per cent of primary learners and 8 per cent of secondary learners reported that they 'learn better when not using a computer'.

Closer analysis suggested that boys were more likely to report more positive attitudes towards using technology for learning (at both primary and secondary level), although girls in primary schools were more likely to indicate that they liked using computers at school. At secondary level, boys were more likely to 'strongly agree' with positive statements about using technology for learning, and to 'strongly disagree' with negative statements. For example, boys were more likely than girls to 'strongly agree' that they enjoyed learning more when they used technology (35 per cent of boys compared to 16 per cent of girls); that technology helped them to learn at their own speed (26 per cent compared to 17 per cent); and technology makes learning more interesting (41 per cent compared to 28 per cent). By contrast, girls were more likely to indicate they merely 'agreed', 'disagreed', or were neutral about the statement (results are provided in full in Tables 3.1 and 3.2 in Appendix 4).

Attitudes towards technologies at school, when considered by gender, are complex and can of course be influenced by many factors, including societal as well as individual influences. It may be that some of these differences can be attributed to gender confidence about responding (and ways of responding), rather than to substantive differences in attitudes.

3.3 E-confidence in using technology for learning

Learners generally exhibited high levels of confidence in their ability to use technology. For example, only four per cent of primary learners and three per cent of secondary learners reported that they were 'not very good' at using computers. Likewise, there was high confidence in their ability to use gaming systems: 88 per cent of primary learners and 82 per cent of secondary learners reported that they were 'good' or 'very good' at using this form of technology.

Secondary learners were also asked about their confidence in using specified applications. In response, large proportions of learners reported that they were 'confident' or 'very confident' of their ability to use search engines (93 per cent),

word-processing programmes (93 per cent), presentation software (92 per cent), and media-sharing websites (88 cent). Lower proportions of learners were 'confident' or 'very confident' about using spreadsheets (72 per cent) and databases (56 per cent).

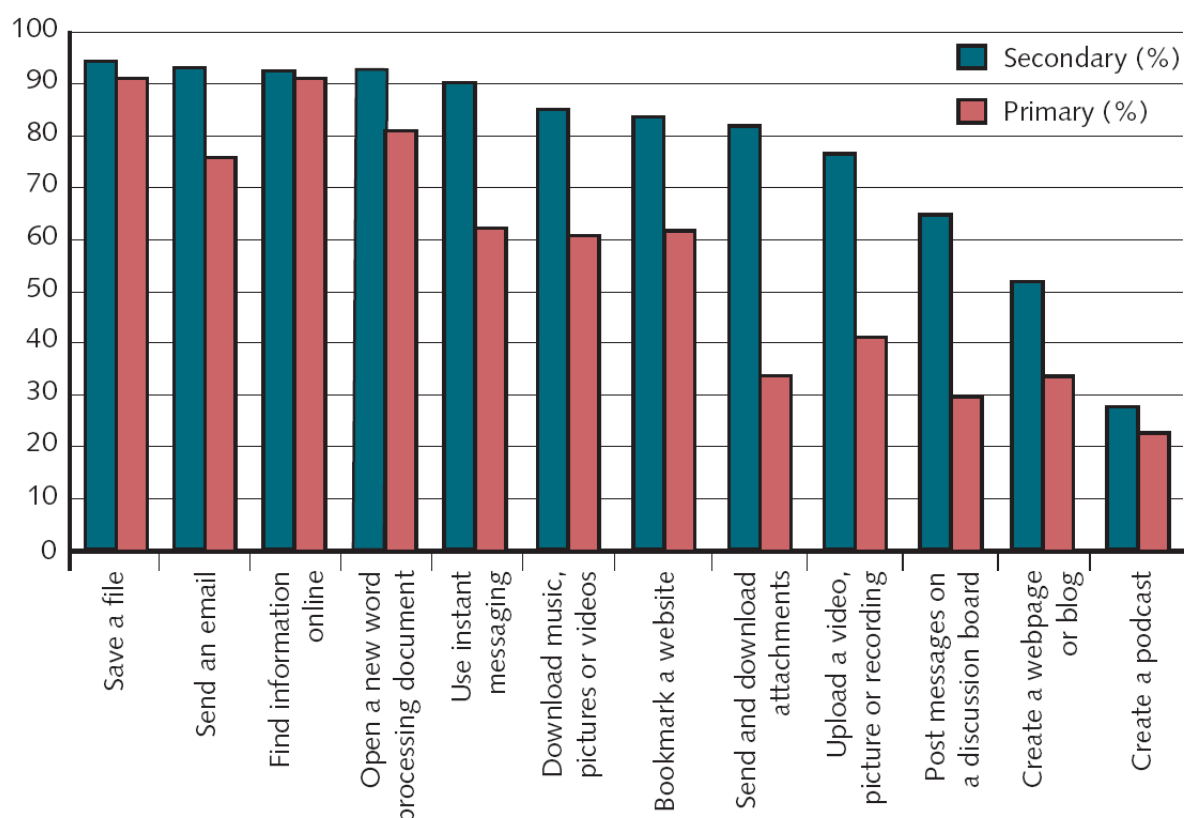
Again, there were some significant differences in the responses provided by boys and girls, at both secondary and primary levels. Boys were more likely to express confidence in their skills, and to describe their skills at using technological equipment as 'very good', whereas girls were more likely to describe their skill level as 'good' (see Tables 3.5 and 3.6 in Appendix 4).

Similar differences were found in the responses from secondary learners to questions about their confidence in using specified applications. Secondary boys were more likely to say that they were 'very confident' in their ability to use the listed software applications, whereas secondary girls were more likely to describe themselves as 'confident' or 'not very or not at all confident'. The only exception to this pattern was found in relation to confidence in using word-processing programmes; against this measure, girls were more likely to describe themselves as 'very confident' and 'confident' (albeit only slightly) (see Table 3.7 in Appendix 4).

3.4 E-skills in using technology for learning

The survey aimed to ascertain not only how confident learners were, but also to get an indication of their level of skills.

The vast majority of learners reported that they were able to perform the more routine tasks such as saving a file, finding information online and opening a new document in a word-processing programme. However, learners indicated that they were less proficient at what might be considered more 'advanced' tasks, such as downloading and uploading material from the internet, or using technology to create web pages, blogs or podcasts (see Figure 3.1).

Figure 3.1 Learner proficiency in technology tasks

Primary N = 1990, Secondary N = 2061

Figure 3.1 also highlights that there was a notable difference in the responses from primary and secondary learners about their knowledge of these tasks. Secondary learners were more likely to report that they were able to complete the more 'advanced' tasks, such as sending and downloading attachments; uploading videos, pictures or recordings onto the internet; and using technology to create web pages, blogs or podcasts.

There were also some significant differences in how girls and boys responded to questions that were designed to test their level of e-skills. Among primary school learners, boys were more likely to report that they knew how to perform the technological tasks listed in Figure 3.1, and particularly the more 'advanced' tasks such as creating a podcast or uploading a video, picture, or a recording onto the internet (see Table 3.8 in Appendix 4).

Similar patterns were found among secondary school learners (see Table 3.9 in Appendix 4). Boys were more likely to indicate that they knew how to perform 'advanced' tasks. Girls were more likely to indicate they knew how to open a word document or send an email. They were also more likely to indicate that they were 'not sure' whether they knew how to perform the tasks that were listed.

It should be noted that the responses may reflect the opportunities that learners have to carry out these tasks, and whether or not teachers encourage them to do them. As Chapter 2 highlighted, it is still uncommon for teachers to encourage the use of social software by learners. This was also revealed in the HTSS, where well over half

of all teacher respondents stated that use of these applications was not encouraged at all, while many stated learners were actually discouraged from using them. The applications that were reported by ICT coordinators to be used most frequently (to a great extent or to some extent) were podcasts (37 per cent), wikis (30 per cent), blogs (26 per cent), online discussion groups (25 per cent) and media-sharing sites (25 per cent). Some teachers are still completely unfamiliar with these types of software, particularly wikis, with 12 per cent stating that they had not heard of these technologies (Rudd et al, forthcoming).

3.5 Factors contributing towards learner e-confidence and e-skills

Further analysis was undertaken to examine which factors may contribute towards shaping learners' e-skills and e-confidence. These two concepts were examined together as factor analysis suggested they were closely intertwined (see Appendix 1).

This analysis included factor analysis and multi-level modelling, which produced some valuable findings about the relationship between key variables and learners' e-confidence and e-skills.

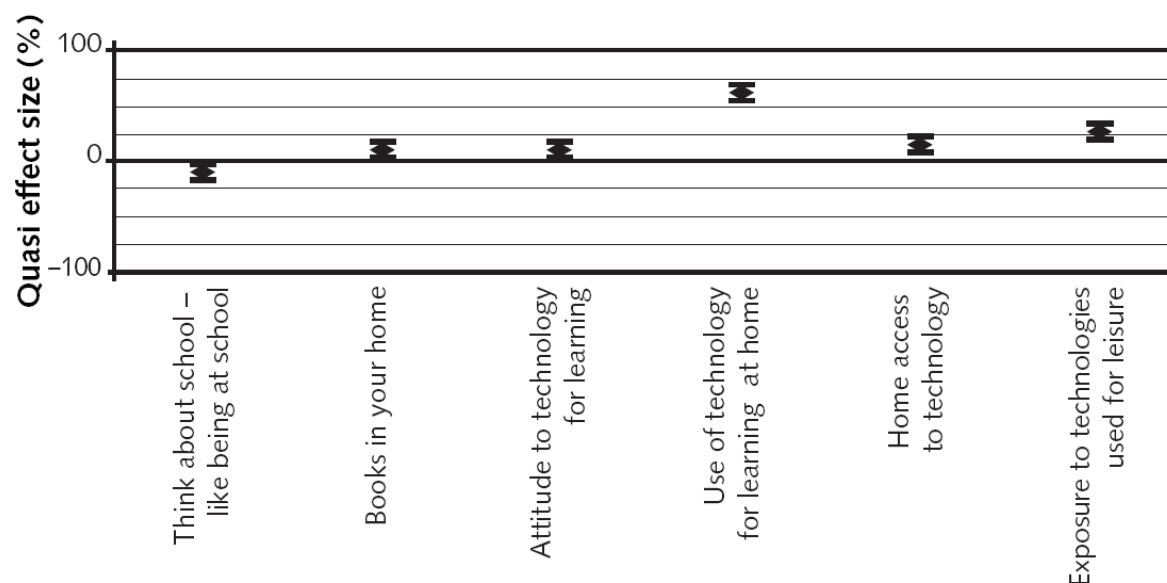
Primary learners

The results from the multi-level modelling of the primary learner data indicated that learners with negative attitudes towards school are more likely to be e-skilled and e-confident (see Figure 3.2). This may be because learners with positive attitudes to school are more conscientious and spend less time on technologies, and hence have lower confidence and skills in this area.

However, the following factors have a positive effect:

- use of technology for learning at home (which has the strongest positive effect)
- exposure to technologies for leisure at home
- home access to technology
- number of books in home (often used as a proxy for socio-economic status)
- positive attitudes towards technology for learning.

Figure 3.2 Multi-level model results for e-skills and e-confidence among primary learners



This figure plots the significant variables in this model. If a variable is shown above the line then this has a positive relationship with the outcome. If a variable is shown below the line then this has a negative relationship with the outcome. The further away from the line the plot falls, the bigger the effect.

The modelling process also indicated the variables not significant in shaping learner e-skills and e-confidence at primary level (see Box 3.1).

Box 3.1 Variables that were not significant in MLM of e-skills and e-confidence in primary learners

Individual variables

- Gender
- Attitudes towards learning
- Technology use in school (as reported by learners)

School level variables

- Percentage of students on free school meals
- Percentage of students with English as an additional language
- Achievement levels of the school at key stage 2
- Pupil–teacher ratio

Combined, these results suggest that primary learners are more likely to be e-confident and e-skilled if they are from a home with high levels of technology which

they can use for learning or leisure activities, and if they use these opportunities regularly.

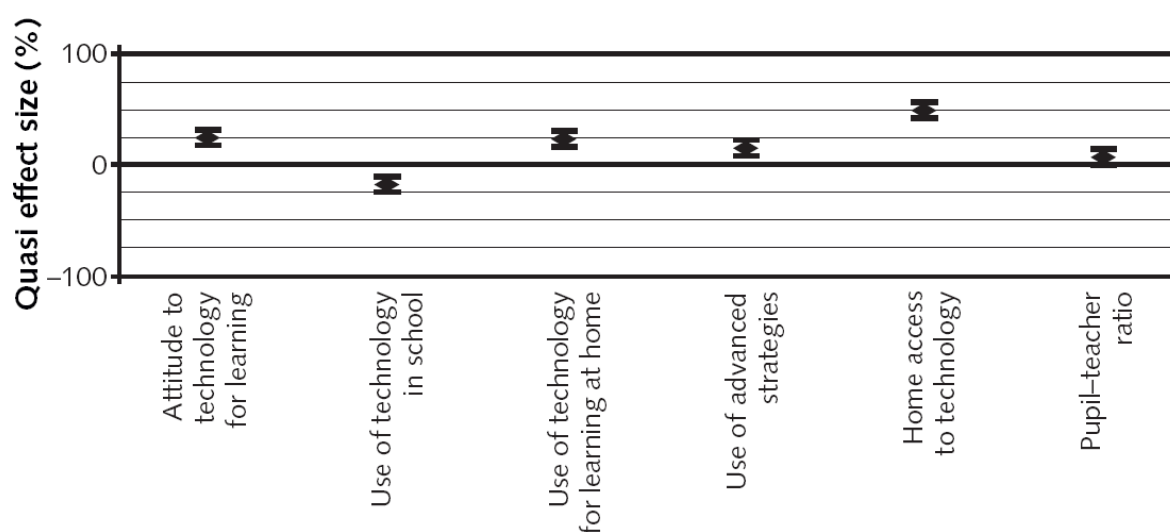
Secondary level

Multi-level modelling for secondary learners produced some similar findings to the results for primary learners. However, at this level, it was use of technology in school that appeared to have a negative effect on e-skills and e-confidence. This suggests that the more learners report using technologies in school, the less likely they are to be skilled and/or confident in using technologies for learning.

This result is surprising, but may stem from the fact that the types of technology being used in schools are more limited than the range of technologies being used at home. This interpretation is strengthened by the fact that, in this model, home access to technology has the strongest positive effect on secondary learners' e-confidence and e-skills.

Figure 3.3 highlights the other factors that were shown to have a significant and positive effect on secondary learners.

Figure 3.3 Multi-level modelling results for secondary learners' e-skills and e-confidence



This figure plots the significant variables in this model. If a variable is shown above the line then this has a positive relationship with the outcome. If a variable is shown below the line then this has a negative relationship with the outcome. The further away from the line the plot falls, the bigger the effect.

In addition, the modelling process also indicated the variables not significant in shaping learner e-skills and e-confidence at secondary level (see Box 3.2).

Box 3.2 Variables that were not significant in MLM of e-skills and e-confidence in secondary learners

Individual variables

- Gender
- Positive attitudes towards school
- Positive attitudes towards learning
- Number of books in home

School level variables

- Percentage of students on free school meals
- Percentage of students with English as an additional language
- Achievement levels of the school at GCSE

Combined, this data suggests that secondary learners are more likely to be e-confident and e-skilled if they have positive attitudes towards technology, and have access to technology for learning at home which they use frequently. The model also suggests that learners that are more e-confident and more e-skilled are likely to use more advanced strategies when using new technologies.

4 E-safety among learners

The e-safety of young learners is a key area of concern for parents and policymakers. The survey, therefore, aimed to examine the e-safety knowledge and practices of learners through a range of variables, namely:

- learners' access to the internet at home and the level of supervision they experience
- whether the learner had received e-education and the source of this education
- attitudes towards e-safety among learners
- the extent of e-safe and unsafe practices among learners.

In addition, this chapter also examines the factors that shape e-safety practices and attitudes among learners, using the survey data provided by respondents as well as school-level data.

4.1 Key findings

This chapter focuses on the e-safety attitudes and practices of learners. In terms of access to the internet the key findings are as follows.

- A very high proportion of learners had access to the internet at home, and a large proportion of learners were not supervised while using the internet. Usage among secondary learners appeared to be monitored less frequently than primary learners, and girls were more likely to report they were supervised while using the internet.
- Despite the low levels of supervision, some limitations were being placed on the length of time learners could spend online, particularly at primary level.

In terms of e-safety practice:

- A considerable number of secondary learners reported having engaged in activities that could be considered unsafe and/or unethical.
- Boys were more likely to be participating in these potentially unsafe practices online.

In terms of learner attitudes towards e-safety:

- Learners appeared to be aware of many of the ethical issues and safe practices for using technology, but a considerable number of primary learners were 'not sure' about key issues.
- Learners at both primary and secondary may benefit from further education about copyright issues and e-bullying.
- Boys were more likely to indicate that it was 'okay' to undertake activities that could be considered unsafe or unethical.

This chapter also examines whether a range of individual or school-level characteristics contribute towards shaping e-safety practices in learners. The data suggests that school-level characteristics were not significant, but individual characteristics can play a key role. These characteristics include gender, e-access at home, e-skills, and attitudes towards school, learning, and using technologies for learning. At primary level, learner practices may also be influenced by the number of books in the home and the level of exposure to using technologies for learning.

4.2 Access and supervision at home

The learner survey revealed that a very high proportion of learners had access to the internet at home: 91 per cent of primary learners and 94 per cent of secondary learners indicated there was an internet connection in their home and, of these, virtually all were allowed access to the connection (98 and 99 per cent respectively).

The data also suggests that a large proportion of learners are not supervised while using the internet: 44 per cent of the primary learners who were allowed to use the internet told us they were not supervised; and a further 43 per cent that they were supervised only sometimes. Secondary learners appear to face even less monitoring – only five per cent of Year 10 learners who are allowed to use the internet reported that they were supervised when online, and 15 per cent only supervised sometimes; 80 per cent said they used the internet unsupervised. However, at both primary and secondary level, girls were more likely to report they were supervised, at least ‘sometimes’, whereas boys were more likely to indicate they were not supervised (see Tables 4.1 and 4.2 in Appendix 4).

Despite this, some limitations are being placed on the length of time learners can spend online, particularly at primary level. Almost half of the primary learners who said they were allowed to use the internet also said that there were rules about how long they could spend on it. By contrast, only a quarter of the equivalent secondary learners said there were any rules about how long they could spend on the computer. There were also notable differences in the duration learners are allowed to spend online: 74 per cent of the primary learners who had time limits placed on their usage said they were not allowed to spend more than two hours a day online; among secondary learners, the equivalent figure was 47 per cent.

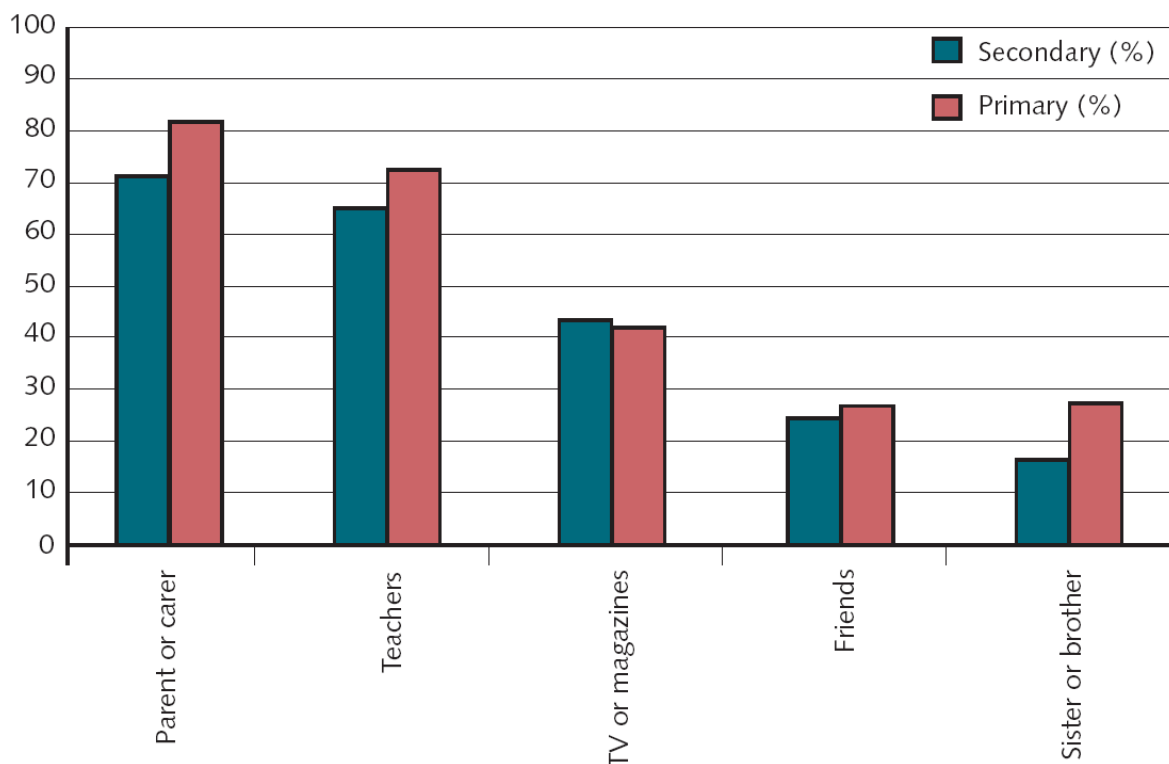
4.3 E-safety: theory and practice

The survey revealed that learners received information about e-safety from a wide range of sources, and also that learners were more likely to receive information from parents and teachers than from siblings or friends (see Figure 4.1). Year 6 learners were also more likely than Year 10 respondents to report they had received some information about this issue. Across both year groups, girls were more likely to report they had received e-safety education (see Tables 4.3 and 4.4 in Appendix 4).

It is important to note that a sizeable proportion of learners indicated they had not received e-safety education from either a teacher or a parent or carer. Among primary learners, around 20 per cent reported they had not received e-safety education from a teacher, while almost 15 per cent had not received e-safety education from a parent. At secondary level, around 35 per cent of learners did not specify they had received information from teachers and 29 per cent did not indicate

a parent or carer. Although these figures cannot account for the experience of those who did not respond to the question, this data nonetheless implies that a substantial proportion of learners have not received any e-safety education, or are not aware of the e-safety education they are receiving.

Figure 4.1 Percentage of learners reporting they have received information about e-safety from particular sources



Secondary N = 2061, Primary N = 1990

These findings need to be set in a context of school leaders reporting they have generally been giving more attention to e-safety in ICT policies in the last year or so. In the HTSS, the vast majority of senior leaders (88 per cent) indicated their school had an e-safety/acceptable use policy. The survey also asked schools about the extent to which they addressed with learners the issue of e-safety through lessons. Overall, about half of senior leaders (56 per cent) said that their school had 'fully' or to a 'great extent' addressed e-safety with learners, while a further third of respondents said the issue had been addressed to 'some extent'. Only four per cent said e-safety had not been addressed with learners and two per cent did not know whether it had been addressed (eight per cent provided no response at all) (Rudd et al, forthcoming).

Are learners practising e-safety?

The survey included a number of questions that examined learner practices that could be linked with e-safety issues. The figures set out in Table 4.1 suggest that a considerable number of secondary learners had engaged in online practices that could, in some respects, be regarded as unsafe and/or unethical, and that learners

of this age are considerably more likely than primary learners to have engaged in internet behaviour that could be seen in this light.

Table 4.1 E-safety practices among learners

Have you ever used computers to do the following?	Secondary	Primary
Download music or videos	85	62
Keep in touch with friends	84	62
Meet new people online	55	27
Copy games and CDs	52	30
Download music or videos <i>illegally</i>	50	12
Post your personal information online	33	9
Pretend information you have found online is your own work	27	12

Secondary N = 2061; primary N = 1990

There were also significant differences in how boys and girls responded to this question (see Tables 4.5 and 4.6 in Appendix 4). Among both primary and secondary learners, boys were more likely to indicate that they had used computers for each of these tasks, except using computers to keep in touch with friends, which girls were more likely to report. Two further (and small) exceptions were noted among secondary learners. At this level, girls were slightly more likely to report they had used computers to post their personal information online (34 per cent for girls, and 33 per cent for boys) and/or to download music or videos (87 per cent of girls, compared to 84 per cent of boys).

Combined, these findings suggest that boys are more likely to be participating in online practices which might be described as 'unsafe'.

Learner attitudes towards e-safety practices

The survey also produced interesting findings about learner attitudes towards e-safety practices (see Table 4.2). Primary learners appear to be aware of many of the ethical issues and safe practices for using technology

Table 4.2 Attitudes towards e-safety among primary learners

Do you agree with these statements?	Yes (%)	No (%)	Not sure (%)	Missing (%)
It's okay to copy games and CDs	29	33	36	2
It's wrong to download music or videos illegally	69	17	12	2
It's safe to chat to people I don't know	6	82	10	2
It's safe to send photos or personal information	3	91	4	2

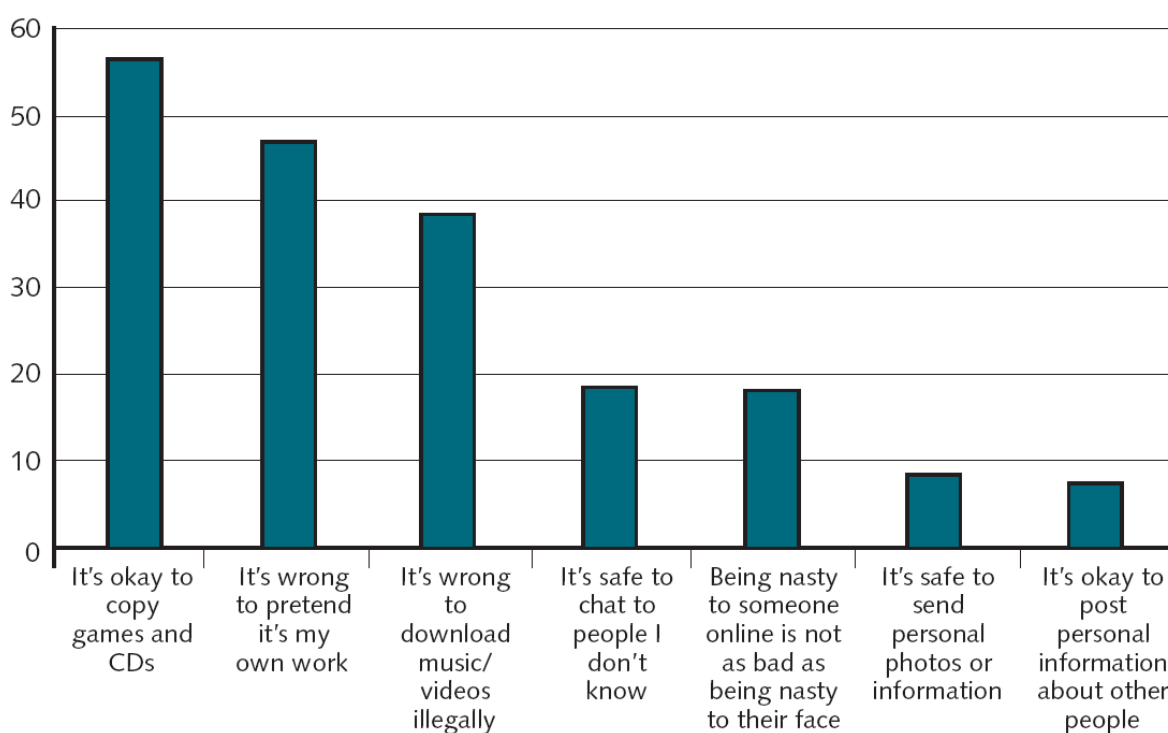
Being mean to someone online is not as bad as being mean to their face	24	47	27	2
It's okay to post personal information about other people	4	86	8	2
It's wrong to use information from the internet and pretend it's my own work	58	25	15	2

N = 1990 Figures may not sum to 100 due to missing responses or rounding.

However, the results also revealed that a considerable number of primary learners were 'not sure' about key issues, such as whether it is okay to copy games and CDs and whether 'being mean to someone online is not as bad as being mean to their face'. It was also notable that 25 per cent of primary learners did not think it was wrong to 'pretend information you have found online is your own work'. These figures suggest that primary learners may benefit from further education about, for example, copyright issues and e-bullying.

The need for some learners to receive further education about copyright issues was underlined by the findings from the survey of secondary learners (see Figure 4.2). This revealed that only 46 per cent of learners 'agreed' or 'strongly agreed' that it was wrong to pretend that information obtained from the internet was their own work. Likewise, a substantial number (57 per cent) of learners indicated that they think 'it's okay to copy games and CDs'. The data suggests higher levels of awareness among secondary learners about the issues surrounding using personal information online and/or online bullying.

Figure 4.2 Attitudes towards e-safety among secondary learners



N = 2061

Again, there were significant differences in the responses provided by boys and girls, at both levels. At primary level, boys were more likely to indicate that it was 'okay' to undertake activities that could be considered unsafe or unethical, while girls were more likely to think it is wrong to download music or videos illegally, or to pretend online information is their own (see Table 4.7 in Appendix 4).

Among secondary learners, boys were typically more likely to 'strongly agree' or 'agree' that it's 'okay' to perform all of the tasks that were asked about. A notable exception to this trend was boys and girls were equally likely to 'strongly agree' or 'agree' that 'it's okay to copy games and CDs' (see Table 4.8 in Appendix 4).

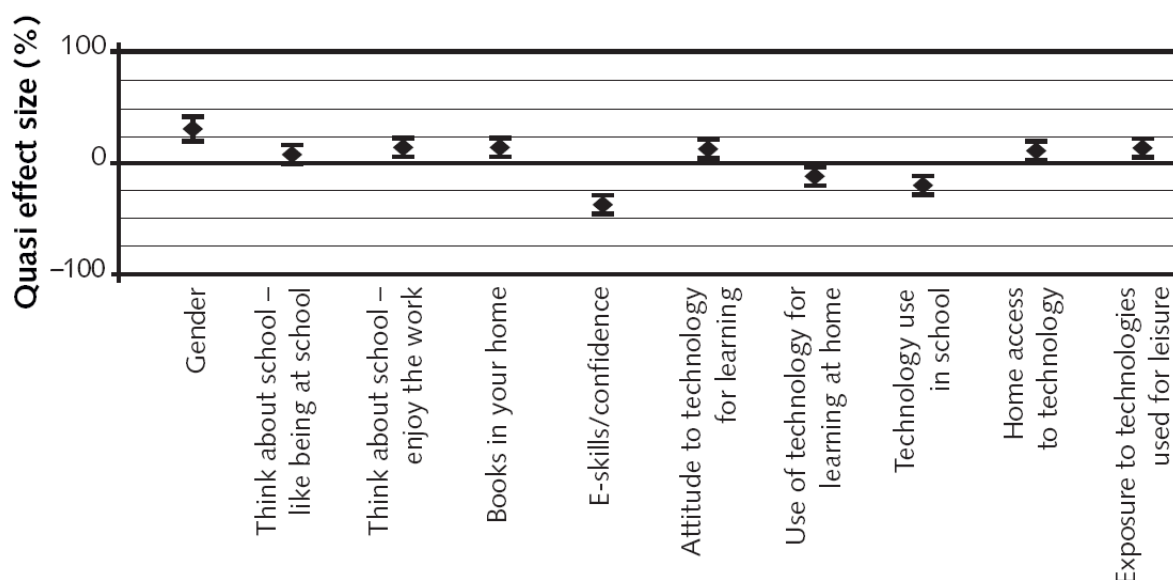
4.4 What factors make a safe learner?

As part of the analysis, NFER also sought to answer the question: what factors contribute to shaping e-safety practices in learners? The analysis examined primary learners and secondary learners separately.

Primary learners

Multi-level modelling for e-safety among primary school learners (see Figure 4.3) suggested that girls are more likely to practise e-safety than boys, and gender is the factor that has the strongest effect on e-safety. Learners with positive attitudes towards using technology for learning are more likely to be e-safe. Also significant, but less influential, are attitudes towards school, attitudes towards learning, the number of books in the learner's home, access to technology at home, and exposure to using technologies for leisure activities (for example, using gaming systems).

Figure 4.3 Multi-level model of e-safety among primary learners



This figure plots the significant variables in this model. If a variable is shown above the line then this has a positive relationship with the outcome. If a variable is shown below the line then this has a negative relationship with the outcome. The further away from the line the plot falls, the bigger the effect.

Learners in primary schools are more likely to be e-safe if they are female; have positive attitudes towards school, learning, and using technology for learning; and have access to technologies for learning and leisure at home.

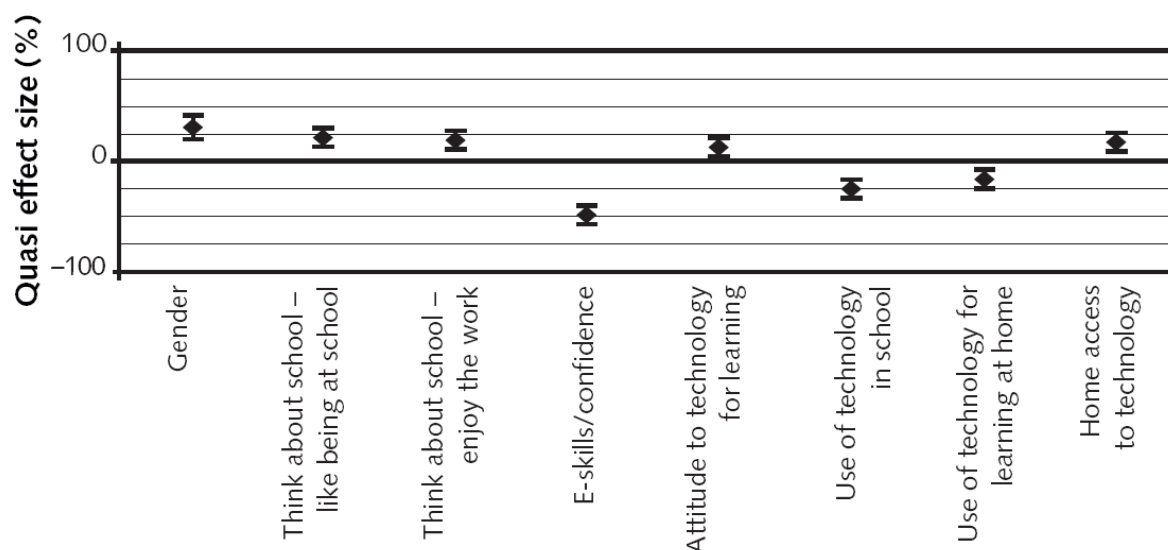
However, the modelling also suggested that learners with high levels of e-confidence and skill are less likely to engage in safe practices. Moreover, pupils who report using technology more at school and at home are more likely to engage in practices that might be considered unsafe. This result is perhaps unsurprising, learners with less e-access or lower e-skill levels will not have the same opportunities for or knowledge about how to undertake unsafe activities online.

Interestingly, the modelling process also indicated that the following school- level characteristics were not significant in shaping learner e-safety at primary level:

- percentage of learners with English as an additional language
- achievement levels of the school at key stage 2 level
- percentage of learners on free school meals
- ratio of pupils to teachers.

Secondary learners

The modelling from the secondary learner data suggested that much of the same factors shape the e-safety of primary and secondary learners (see Figure 4.4). That is, e-safety among secondary learners is shaped by: gender; attitudes towards school and learning; attitudes towards using technology for learning; home access to technology; and using technology at home and at school. However, Figure 4.4 also illustrates that these factors appear to have stronger effects at secondary level (be they positive or negative).

Figure 4.4 Multi-level model of e-safety among secondary learners

This figure plots the significant variables in this model. If a variable is shown above the line then this has a positive relationship with the outcome. If a variable is shown below the line then this has a negative relationship with the outcome. The further away from the line the plot falls, the bigger the effect.

In addition, the non-significant variables were also slightly different in each sector. In contrast to the primary model, the number of books in the learner's home does not appear to contribute to learner e-safety at secondary level. Exposure to using technologies for leisure was also not a factor that emerged in the secondary data.

Despite these differences, the modelling process also indicated that, like the primary learners, the following school-level characteristics were not significant in shaping learner e-safety at secondary level:

- percentage of learners with English as an additional language
- achievement levels of the school at GCSE
- percentage of learners on free school meals
- ratio of pupils to teachers.

5 Conclusions and recommendations

This report has presented the findings of a large-scale survey of over 4000 learners: 1990 in primary schools (Year 6) and 2061 in secondary schools (Year 10). The survey provided an important opportunity to obtain learners' views and attitudes in relation to three broad areas: e-access, e-maturity and e-safety. The project has sought to identify any links between learner attitudes, school characteristics, and learners' technological skills, e-confidence and levels of e-maturity. The information has been obtained with a view to informing Becta about progress towards learner-related goals as outlined in the strategy, *Harnessing Technology: Next Generation Learning 2008-14* (Becta 2008). It will also provide background information for a more general audience, including all those who work with learners and new technologies.

5.1 Summary of key findings

The survey responses have produced many useful findings, and these have been reported in previous chapters. By means of summing up, NFER suggests that the following are the key overall findings from this survey.

- Technological resource levels in schools appear good and the use of display technology and computers in both primary and secondary schools appears to be widespread. Good access to new technologies suggests that some technologies are becoming embedded in schools. Other technologies, however, are 'emerging', and others (such as the newer Web 2.0 or 'advanced' technologies) appear to have only been used in limited ways, despite their potential benefits for learning.
- Learning platforms are becoming more established in schools, although there is definitely further scope to encourage and promote their use.
- Access to technologies at home appears to be high, but is still not universal, and there may be some groups of learners for whom it may be difficult to secure access. Despite this, for many, the home appears to be a site of learning, and schools should capitalise on this more. A very high proportion of learners had access to the internet at home and this may help motivation to do homework and coursework.
- Further analysis indicated that e-access is shaped by individual and school-level characteristics. The prevalence and range of technologies in learners' homes appears to increase as socio-economic status increases. School-level characteristics appear to shape how frequently learners use technology, especially at primary level. For example, primary schools tend to make less frequent use of technology if they have notably high or notably low achievement scores, or notably high or low proportions of learners in receipt of free school meals or with English as an additional language.
- Learners are also, on the whole, very confident about using technologies, and relatively skilled, at least on 'routine' tasks. Internet research and, to a lesser extent, the presentation of work are the tasks learners most frequently use computers for, both at school and at home. There were

relatively low proportions of learners reporting use of what might be considered ‘advanced’ e-skills.

- There are a number of gender differences in the ways in which new technologies are used. For example, at primary level, fewer girls than boys are aware of some technologies and girls (at both primary and secondary levels) are more likely to use technology at home to complete homework-related tasks than boys. These, and some of the other gender differences identified, might merit further investigation.
- There was something of a mismatch between schools’ reported provision of e-safety advice and guidance, and learners’ views about such provision (although teachers and parents are the main sources of e-safety advice). Learners’ reported views on a number of ethical and safety issues suggest that there is scope for such provision by schools to be improved, especially in the primary sector. The survey findings also revealed that a large proportion of learners are not supervised while using the internet at home.

The NFER would like to emphasise, however, that all of the findings presented in this report must be treated cautiously. This report is based on learners’ self-reporting and, at this juncture, there is no means of independently verifying the veracity of the responses. For example, the NFER has no means of confirming the prevalence or types of technologies in learner homes, and is therefore reporting learner perceptions of their access to technologies.

5.2 Recommendations emerging from these findings

In the context of these findings, the NFER offers the following recommendations for consideration by Becta and others interested in the area of new technologies and learning.

- There seems to be a requirement for not only working towards universal/home access, but also ensuring that this is genuinely universal, and that the final 4–6 per cent without home access are not overlooked. To achieve this goal, particular attention may need to be given to ‘hard to reach’ groups or learners and families for whom there are serious barriers to home access and home use of computers.
- Learners, on the whole, have good access to technologies at home, and it would be beneficial for schools to build upon and make greater use of the ICT skills and experience that learners have acquired at home and outside of school. Examples might include greater use of mobile phones and gaming skills.
- There is a continuing need for the further encouragement of the use of particular (and new) technology skills and tasks within lessons and through homework and coursework; while there are some signs of new technologies being embedded in schools, there are still too many variations in the use of ICT across different school subjects.

- Awareness and use of learning platforms are both lower than they should be. We would recommend taking steps to further develop awareness among staff, learners and parents of what learning platforms are and what they can be used for. Relevant professional development activities for staff might be useful in this context.
- Many schools have appropriate e-safety/acceptable use policies, but the challenge now may be to ensure that these are implemented consistently and comprehensively throughout the school.

All of these recommendations are offered in an overall context of learners having very positive attitudes about using new technologies and about their impact on learning. Evidence from other surveys (eg, Rudd et al, forthcoming) suggests that teachers and parents are also positive, and all of this bodes well for the further development and use of new technologies for learning in the future.

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